

The foregoing table gives the following results:—

No. of obser- vations.	Hour.	Temperature of air.	No. of obser- vations.	Temperature of sea-surface.
7	4 a.m.	53·5	6	55·0
8	8 a.m.	55·7	7	55·8
7	Noon.	57·0	7	54·7
5	4 p.m.	58·0	5	56·0
6	8 p.m.	55·6	6	55·5
6	Midnight.	54·5	6	55·1
		55·6		55·3

The subject of mussel-beds and ground bait, which I had intended referring to, I find so comprehensively treated in a paper by Mr. Wilcock, about to be published among the prize essays of the Edinburgh Fisheries Exhibition, that I have omitted an account of this portion of my investigations.

PS.—The Rev. A. Norman having kindly examined* some of the captures made in the ‘Triton,’ has identified them as follows:—From the surface-net—*Anomalocera Petersonii*, Templeton, *Dias longiremisis*, Lilljeborg, *Evadne Nordmanni*, Lovén, *Pondon polyphemoides*, Leuckart, and *Acanthometra*; from the dredge—*Melita obtusata*, Montagu, *Probolium pollexianum*, Bate, *Pherusa fucicola*, Lead., *Calliopijs bidentatus*, Norman, *Eurystheus erythrophthalmus*, Lilljeborg, *Cheirocratus Sundevallii*, Rathke.

Report on the Echinodermata collected by Mr. Francis Day in H.M.S. ‘Triton’ off the Eastern Coast of Scotland in July 1882. By Prof. F. JEFFREY BELL, M.A., F.R.M.S. (Communicated by F. DAY, F.L.S.)

[Read December 21, 1882.]

A SOMEWHAT large collection of Echinodermata was made, *Spartangus purpureus* and *Asterias violacea* being very abundantly represented, as was also *Echinus elegans*, of which a very large number of small (though not one large) specimens were taken; entangled in the spines of many of these last were small egg-cases with unfertilized ova within. The Ophiurids are only six in number; and the single Holothurian is not in a condition for determination.

* Mr. Norman's memorandum was received after my paper had been read.—F. D.

The chief interest and importance of the collection seems to me to lie most in the fact that it may be taken as an earnest of what is now a very important factor in the resolution of the kind of problems that are associated with the question of the struggle for existence. When such questions as, why have these Starfishes strong spines, and those stout plates, are proposed to us, we can but give play to the imagination unless we know the kind of animals that live with them, and the kind of ground on which they live. Much of the matter to be resolved is beyond the ken of the cabinet naturalist; but I fancy that some assistance may be rendered by giving a statement of the species found at each dredging- or trawling-station, as this may hereafter be worked up when the reports of other zoologists have come to hand.

Dredge 1. *Echinus esculentus*, *E. miliaris*, *Strongylocentrotus drobachiensis*, *Echinocardium flavescens*, *Ophiopholis aculeata*.

Dredge 2. *Echinus elegans*, *E. flavescens*, *Brissopsis lyrifera*, *Cribrella oculata*, *Astropecten irregularis*, *Ophioglypha ciliata*.

Dredge 3. *Spatangus purpureus*, *Echinocardium flavescens*.

Dredge 4. *Echinus elegans*, *Spatangus purpureus*, *Echinocardium flavescens*.

Dredge 5. *E. elegans*, *E. flavescens*, *Asterias violacea*, *A. Muel-leri*, *Astropecten irregularis*, *A. pentacanthus* (?) (yg.).

Dredge 6. As 5, with *Luidia Sarsi*.

Dredge 7. *Echinocyamus pusillus*, *Spatangus purpureus*, *Asterias violacea*, *Cribrella oculata*.

Trawl 3. *Echinus esculentus*, *E. flavescens*, *Sp. purpureus*, *Asterias violacea*, *Solaster endeca*, *Stichaster roseus*, *Astropecten irregularis*, *Ophioglypha ciliata*.

The finds at "Trawl 3" were more numerous than those at any other station. There were some 25 specimens of *Asterias violacea*; and the two examples of *Solaster* and the one *Cribrella* were of large size. Of twenty examples of the *Asterias* only one had lost an arm; so that if we allow anything for the dangers of the trawl, we must assume that the station under examination must be a safe place for Starfishes to inhabit. Absolutely large as the collection made at this point was, we can be by no means certain that it is proportionately so; for though it is well known that the dredger often brings up a very multitude of Echinoderms, the only kind of information given is such as can be conveyed by "scores and scores" and other vague expressions.

Even where dredgers have not the power or desire to preserve all the specimens they bring up from the deep, it would be exceedingly useful if they would sort out some of the more frequent species, and count the number lying before them: nowhere is it more true than here that "science is measurement;" and no more valuable piece of work could be done by those who are anxious to assist in the formation of a complete catalogue of our own seas. When a "few specimens from each station" are sent, it is quite impossible to say whether a multitude of *Asterias* would mean a scarcity of fishes or mollusks, or, as here, to direct attention to the fact that the station richest in *A. violacea* (Trawl 3) has no representatives of the small *Echinus elegans*, and that that Echinoid is commonest at another point (Dredge 4) where the Starfish is conspicuous by its absence. On the other hand, another Echinoid, *Spatangus purpureus*, lives freely enough with the *Asterias*; for 175 specimens are reported by Dr. Day to have been taken with Trawl 3. Indeed the region dredged over appears to be a very Paradise for *S. purpureus*, as might perhaps be expected from the sandy character of the bottom.

Put in systematic fashion, we find the collection to consist of 18 species in all, viz. :—

- Echinus esculentus*, *E. miliaris*, and *E. elegans*.
Strongylocentrotus drobachiensis.
Echinocyamus pusillus.
Spatangus purpureus.
Echinocardium flavescens.
Brissopsis lyrifera. Single specimen only.
Asterias violacea and *A. Muelleri*.
Stichaster roseus. Single specimen only.
Solaster endeca.
Cribrella oculata.
Astropecten irregularis and *A. pentacanthus?* (yg.).
Luidia Sarsi. Single specimen only.
Ophioglypha ciliata, and *Ophiopholis aculeata*.
-